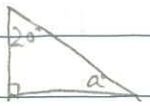
H&H Review Set 14B (2/12)+ (18/11)

1a) $a+20+90=180$ ($\angle$s sum of $\triangle$)



$a=180-110$

$a=70$

1b) $x=70$ (base $\angle$s, isos $\triangle$)

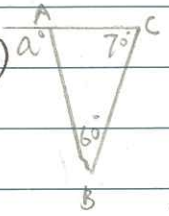
$a+70+x=180$ ($\angle$s sum of $\triangle$)

$a+70+70=180$

$a=40$

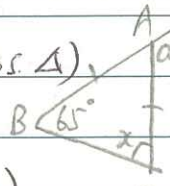
1c) $a=70+60$ (ext. $\angle$s of $\triangle$)

$a=130$



1d) $x=65$ (base $\angle$s, isos $\triangle$)

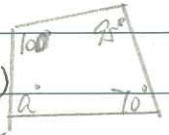
$a=65+x$ (ext. $\angle$s of $\triangle$)



$a=65+65$

$a=130$

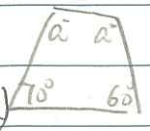
1e) $100+95+70+a=360$ ($\angle$s sum of quadrilateral)



$a=360-265$

$a=95$

1f) $a+a+70+60=360$ ($\angle$s sum of quadrilateral)

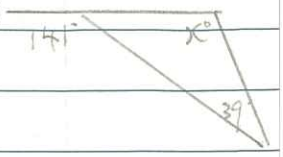


$2a=360-130$

$2a=230$

$a=115$

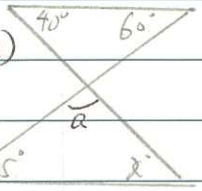
2a) $141=x+39$ (ext. $\angle$s of $\triangle$)



$x=141-39$

$x=102$

2b) $a=40+60$ (ext. $\angle$s of $\triangle$)



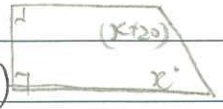
$a=100$

$a+35+x=180$ ($\angle$s sum of $\triangle$)

$x=180-35-100$

$x=45$

2c) $90+90+(x+20)+x=360$ ($\angle$s sum of quadrilateral)

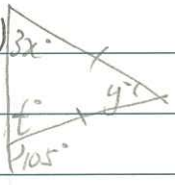


$2x=360-200$

$x=80$

3a) Find x, y and t

$t+105=180$ ($\angle$s on st. line)



$t=75$

$3x=t$ (base $\angle$s, isos $\triangle$)

$3x=75$

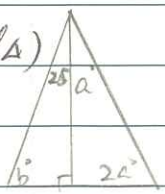
$x=25$

$3x+t+y=180$ ($\angle$s sum of $\triangle$)

$y=180-75-75$

$y=30$

3b) $25+b+90=180$ ($\angle$s sum of $\triangle$)



$b=180-90-25$

$b=65$

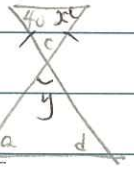
$a+2a+b+25=180$ ($\angle$s sum of $\triangle$)

$3a=180-65-25$

$3a=90$

$a=30$

3c Find a, c, d.



$x = 40$ (base $\angle$s, isos. $\triangle$)

$40 + x + c = 180$ ($\angle$s sum of $\triangle$)

$c = 180 - 40 - 40$

$\underline{c = 100}$

$a + 130 = 180$ ($\angle$s on st. line)

$\underline{a = 50}$

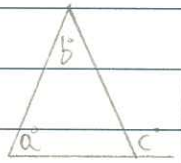
$y = c$ (vert. opp. $\angle$s)

$y + d = 130$ (ext. $\angle$ of $\triangle$)

$d = 130 - 100$

$\underline{d = 30}$

4a) $\underline{a + b = c}$ (ext. $\angle$s of $\triangle$)



4b) $x + 115 = 180$ ($\angle$s on st. line)

$x = 180 - 115 = 65$

$90 + b + a + x = 360$

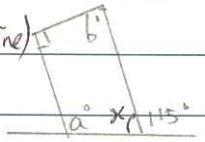
($\angle$s sum of quadrilateral)

$90 + a + b + 65 = 360$

$a + b = 360 - 90 - 65$

$\underline{a + b = 205}$

270
65
205



4c) $a = x$ (base $\angle$s, isos. $\triangle$)

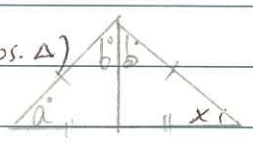
$a + x + b + b = 180$

($\angle$s sum of $\triangle$)

$2a + 2b = 180$

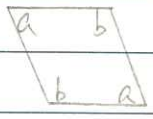
$2(a + b) = 180$

$\underline{a + b = 90}$



5a) a is a parallelogram

(∵ opposite angles are equal)

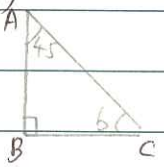


5b) b is a right-angled isosceles triangle

$45 + 90 + b = 180$ ($\angle$s sum of $\triangle$)

$\therefore \quad b = 45$

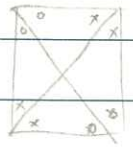
$\therefore AB = BC$ (base $\angle$s are equal)



5c) c is a rhombus

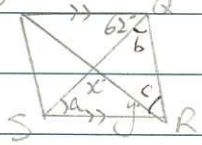
∵ diagonals bisect all angles.

∴ it is a parallelogram (∵ opp $\angle$s equal)



6) ∵ PQRS is a rhombus

$a = 62$ (alt. $\angle$s, PQ // SR)



$b = 62$ (diagonals of rhombus bisect the angles.)

$c = y$

$c + y + b + 62 = 180$ (co-int. $\angle$s, PQ // SR)

$2y = 180 - 124$

$2y = 56$

$\underline{y = 28}$

$a + x + y = 180$ ($\angle$s sum of $\triangle$)

$x = 180 - 62 - 28$

$\underline{x = 90}$

7a) $5x = (5-2) \times 180$ ($\angle$s sum of polygon)

$\underline{x = \frac{540}{5} = 108}$

7b) $140 + 90 + 120 + 2x + 110 = (6-2) \times 180$ ($\angle$s sum of polygon)

140
120
110
90
460

$2x = 720 - 460$

$2x = 260$

$\underline{x = 130}$

H&H

Review Set 14B (continue)

8a) Is a square a rectangle?

Yes, a square is a special type of rectangle

∵ both of them have 2 pairs of parallel lines and a right angle

8b) Is rectangle a parallelogram?

Yes, a rectangle is a special parallelogram

∵ both of them have 2 pairs of parallel lines.

9 Let x be the angle of a regular 9-gon.

$x \times 9 = (9-2) \times 180°$

(∠s sum of polygon)

$9x = 7 \times 180$

$x = 7 \times 20$

$x = 140$

10. Can a regular polygon have angles of size 155°?

Let x be the size of a n-sided polygon

$nx = (n-2) \times 180$

$nx = 180n - 360$

$180n - nx = 360$

$n(180-x) = 360$

$n = \frac{360}{180-x}$

When $x = 155$

$n = \frac{360}{180-155}$

$n = \frac{360}{25}$

$n = 14.4$

∵ 14.4 is not a whole number

∴ A regular polygon cannot have angles of size 155°

~~10. Can a regular polygon have angles of size 155°.~~

~~Let x be the size of a n-sided polygon~~

$nx = (n-2) \times 180$

$nx = 180n - 360$

$360 = 180n - nx$

$360 = n(180-x)$

$n = \frac{360}{180-x}$

When $x = 155$, $n = \frac{360}{180-155} = \frac{360}{25}$

$= 14.4$